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(54) **POLYMERIC SUBSTRATE WITH A SURFACE HAVING REDUCED BIOMOLECULE ADHESION, AND THERMOPLASTIC ARTICLES OF SUCH SUBSTRATE**

(57) A substrate is described having a treated contact surface comprising a carbon or silicon compound comprising from 1 to 30 atomic percent oxygen, from 0.1 to 30 atomic percent nitrogen, or both, each as measured by XPS. The treated contact surface has a biomolecule recovery percentage greater than the biomolecule recovery percentage of the surface before treatment according to the method.

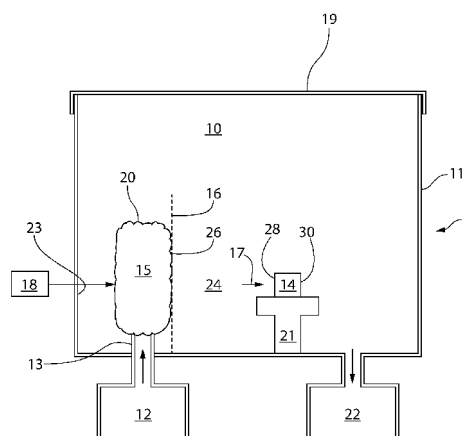


FIG. 1



PARTIAL EUROPEAN SEARCH REPORT

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

EP 20 21 5505

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	J.V. DA MAIA ET AL: "Influence of gas and treatment time on the surface modification of EPDM rubber treated at afterglow microwave plasmas", APPLIED SURFACE SCIENCE, vol. 285, 1 November 2013 (2013-11-01), pages 918-926, XP055300824, AMSTERDAM, NL ISSN: 0169-4332, DOI: 10.1016/j.apsusc.2013.09.013 * the whole document *	1-4, 9-14	INV. C08J7/12 B01L3/00 ADD. C08J7/18
A	EP 2 251 452 A2 (CV HOLDINGS LLC [US]) 17 November 2010 (2010-11-17) * paragraphs [0864] - [0875]; example 15; table 17 *	1-4, 9-14	
A	EP 1 859 866 A1 (GENETIX LTD [GB]) 28 November 2007 (2007-11-28) * paragraphs [0002] - [0004], [0007], [0011], [0017], [0018], [0025], [0068] - [0076]; table 1 *	1-4, 9-14	
			TECHNICAL FIELDS SEARCHED (IPC)
			C08J B01L

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:
see sheet C

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EPO FORM 1503 03.82 (P04E07)

Place of search Munich	Date of completion of the search 8 March 2022	Examiner Okunowski, Joachim
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		



INCOMPLETE SEARCH SHEET C

Application Number

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Claim(s) completely searchable:

2, 3

Claim(s) searched incompletely:

1, 4, 9-14

Claim(s) not searched:

5-8

Reason for the limitation of the search:

The claims filed on 23-03-2021 all do not find basis in the application as originally filed, nor in the earlier application EP16738912 as originally filed, and appear therefore to contravene both Article 123(2) EPC and 76(1) EPC.

The present claims clearly do not find basis in the original claims of the earlier application. As basis, in the submission of 23-03-2021, paragraphs [0015]-[0018] and [0021]-[0023] of the description have been indicated (the original descriptions of the present application and of the earlier application appear to be identical in contest, except that, at the end of the present description, a list of claim-like clauses corresponding to the original claims of the earlier application has been added), but these paragraphs offer no clear and unambiguous disclosure of the subject-matter of the present claims. Paragraph [0015] relates to an aspect of the invention where specifically the surface of a polymeric article is treated, but limiting itself to a specific biomolecule recovery, being silent on zwitterionic species. These are disclosed in paragraph [0016], but for "other", i.e. different, aspects of the invention. Paragraph [0017] relates specifically to forming a bond between zwitterion-comprising copolymers and a hydroxylated plastic or SiOx-coated glass, and paragraph [0018] is limited to vessels. Paragraphs [0021]-[0023] cannot remedy the above.

A better basis might perhaps be paragraph [0032] of the original description (also in conjunction with original paragraphs [0006]-[0008], but embodiment (i) therein requires the presence of an organosilicon precursor in the gas from which the plasma is formed, something claim 1 is silent about, and embodiment (ii) is again limited to SiOx-coated glass substrates. Furthermore, these embodiments (i) and (ii) are distinct from the embodiments (i) and (ii) in paragraphs [0015]-[0018], casting doubt on which embodiment actually is being referred to when reference is made to embodiment (i) or embodiment (ii) further on in the description.

With response dated 13-08-2021, the applicant has indicated that, as a main request, the search should instead be done on a claim 1 with the wording:

"A method for providing a non-specific biomolecule adsorption and/or non-specific biomolecule binding resistant coated surface, the method composing the steps:

- (a) providing a substrate with a hydroxyl functional surface;
- (b) providing a copolymer solution composing a solvent and at least one zwitterionic copolymer, wherein the at least one zwitterionic copolymer composes at least one siloxane moiety and at least one zwitterion moiety;
- (c) reacting the hydroxyl functional surface with the at least one

INCOMPLETE SEARCH
SHEET C

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zwitterionic copolymer.

(d) removing the copolymer solution, thus forming a non-specific biomolecule adsorption and/or biomolecule binding resistant coated surface.", i.e. the embodiment of claim 1 of 23-03-2021 with the additional feature "(d) removing the copolymer solution". The subject-matter of claims 5 and 6-8 of 23-03-2021 were requested to be removed from the subject-matter to be searched. As an auxiliary request, it was requested that the subject-matter to be searched to claims 2 and 3 as dependent upon claim 1, which correspond to claims 3 and 2, respectively, as filed on 23-03-2021 (a renumbering which seems to be without substantive effect).

It is true that the wording of new claim as proposed on 13-08-2021 finds, in itself, effective disclosure in paragraph [0034] of the original description. However, this paragraph finds disclosure in the application as filed only in the context of original paragraphs [0032] or [0029] of the description. Thus, claim 1 as proposed on 13-08-2021 is still considered to represent added subject-matter over the application as originally filed as well as over the earlier application as originally filed. As a consequence, the present search is limited to claim 1 as proposed on 13-08-2021 but limited to either claim 2 or claim 3 as filed on 23-03-2021, and claims 4 and 9-14 limited accordingly.

ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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